PATENT ABSTRACTS OF JAPAN

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(54) SYSTEM FOR REPORTING BUSY CONDITION INFORMATION OF CALL CHANNEL

(57)Abstract:

PURPOSE: To reduce invalid originating calls by counting the number of originating call connection request calls from a portable terminal and cases of connection disable in a radio base station so as to report and display it to/in the portable terminal.
CONSTITUTION: A control channel control part 4 performs access to a call channel control part 7 and instructs connection when a dead channel exists so that the call channel control part 7 assigns a radio band for the dead call channel 9 to the portable terminal. Unless the dead channel exists, originating call connection disable is reported to the portable terminal through a radio band for a control channel 11. Moreover, the control channel control part 4 reports enable/disable of catching of the call channel to a part 3 for counting the number of calls and the part 3 counts the respective number of calls. Then, a multi-address part 2 for the number of calls reads the contents of a connection request counter or/and the number of connection disable calls counter at each interval of previously fixed time so that multiple addresses are executed to the portable terminal through the use of a multi-address channel 10.
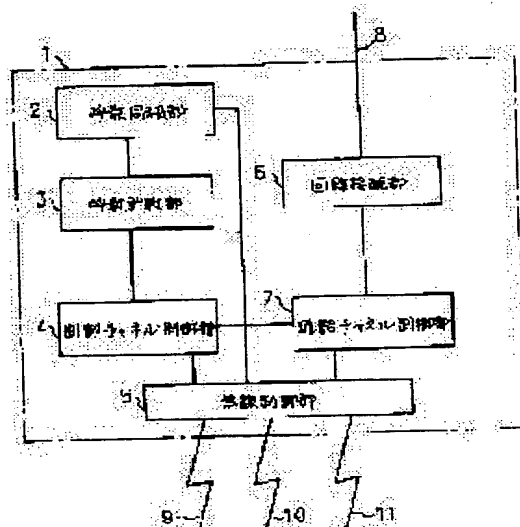
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CLAIMS

[Claim(s)]
[Claim 1] In a communication network including the base transceiver station which receives the originating-connection demand from a wireless terminal in the originating-connection demand from a wireless terminal The base transceiver station is equipped with the means. counting which carries out counting of the number of calls it became impossible by closure of a message channel to connect — When there is an originating-connection demand from a wireless terminal, the demand concerned is judged to be improper by closure of a message channel and that is notified to the terminal concerned from a base transceiver station, said counting — the message channel characterized by the message channel containing the number of calls which carried out counting with the means, and which is not connectable being crowded, also notifying condition information to the terminal concerned, and the message channel concerned being crowded with the terminals concerned which received this for a display means each time, and displaying condition information — crowded — the notice method of condition information.
[Claim 2] In a communication network including the base transceiver station which receives the originating-connection demand from a wireless terminal in the originating-connection demand from a wireless terminal The base transceiver station is equipped with the means. counting which carries out counting of the number of calls it became impossible by closure of a message channel to connect — As opposed to all the wireless terminals in the area which receives an originating-connection demand in this base transceiver station said counting — the message channel which the message channel containing the number of calls which carried out counting with the means, and which is not connectable is crowded, gives the multiple address notice of the condition information, and is characterized by the message channel being always crowded with the wireless terminals which received this for a display means, and displaying condition information — crowded — the notice method of condition information.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to connection control of the wireless terminal of
the pocket mold like a land mobile radiotelephone or a personal personal telephone.
[0002]
[Description of the Prior Art] This pocket type of wireless terminal (it may only be hereafter
called a personal digital assistant) has led to the communication network through the base
transceiver station. A busy signal will be returned, if the message channel which should be
assigned to the dispatch demand at a base transceiver station side is altogether used by the
message of other personal digital assistants and there is no opening in the originating
connection of such a personal digital assistant conventionally, when a personal digital assistant
requires a dispatch demand of a base transceiver station by the control channel. Or in the
condition that all message channels are used, when a message channel and a control channel
are 1 to 1, even if it newly performs a dispatch demand, since a control channel cannot be
caught, it will be in a no response condition.
[0003]
[Problem(s) to be Solved by the Invention] anyway, although it did in this way and the personal
digital assistant performed the dispatch demand, in saying that the message channel is closed
and a message is impossible Since the number of other personal digital assistants which a
message channel is crowded in the base transceiver station area where the personal digital
assistant belongs, and are going to perform condition or an originating connection etc. cannot
fully grasp the addresser from the personal digital assistant, That is, since it was crowded and
the situation of condition was not able to judge objective, blindly, it was going to catch the
message channel and, also after that, dispatch actuation had to be repeated.
[0004] Even when it was crowded, the situation of condition could judge objective and it was
said that the direction which moves to other base transceiver station area, and resends from
the base transceiver station area which is now can catch a message channel early according to
it, there was a fault that dispatch actuation had to be repeated, conventionally until such a thing
was not completed from it being crowded and the situation of condition not being judged but it
could catch the message channel in vain.
[0005] the number of the personal digital assistants which are demanding the originating
connection in the communications area which the purpose of this invention solves the fault of
this conventional technique, and a certain base transceiver station covers (management) — or
The number of personal digital assistants which was not able to send by the message channel
busy although the originating connection was required by notifying an addresser instancy Make
it realize that it is earlier to have told the addresser about confusion extent of the message
channel in the area concerned, to have moved to other base transceiver station area, and to
redo call origination, and it is urged. It is to make it refrain from call origination for a while etc.
for the message channel which can reduce an addresser's dissatisfaction over the ability not to
supplement with a message channel easily to be crowded, and offer the notice method of
condition information.

[0006]

[Means for Solving the Problem] counting which carries out counting of the number of calls it became impossible in the originating-connection demand from a wireless terminal to connect by closure of a message channel in the communication network which includes the base transceiver station which receives the originating-connection demand from a wireless terminal by this invention for the above-mentioned purpose achievement — the base transceiver station was equipped with the means.

[0007]

[Function] the time of there being an originating-connection demand from a wireless terminal, judging the demand concerned to be improper by closure of a message channel, and notifying that to the terminal concerned from a base transceiver station — said counting — the message channel containing the number of calls which carried out counting with the means and which is not connectable is crowded, condition information is notified to the terminal concerned, the message channel concerned is crowded for a display means, and condition information expresses for it as the terminal concerned which received this each time.

[0008] or counting which carries out counting of the number of calls it became impossible by closure of a message channel to connect — all the wireless terminals in the area which equips the base transceiver station with the means and receives an originating-connection demand in this base transceiver station — receiving — said counting — the message channel containing the number of calls which carried out counting with a means and which is not connectable is crowded, the multiple address notice of the condition information gives, the message channel is crowded for a display means, and condition information always expresses for it as the wireless terminal which received this. The point that the traffic situation of the communications area affiliated with a base transceiver station can be notified at a personal digital assistant differs from a Prior art fundamentally on real time.

[0009]

[Example] Hereafter, the example of this invention is explained using a drawing. Drawing 3 and drawing 4 are the explanatory views showing the concept of the counting that the base transceiver station carried out in this invention carries out counting of the generating number of calls of the connection request in the area to cover, and the number of calls from which connecting became impossible by the message channel busy then, respectively.

[0010] First, the generating number of calls of a connection request is defined as the total of the dispatch demand number of calls within the period (T) defined beforehand. on the other hand — a connection improper number of calls — two kinds of following counting — there is an approach.

[0011] ** The sum total of a connection improper number of calls continuously generated including the connection improper number of calls of the beginning from the time of the sum total ** connection failure of the connection improper number of calls generated within the above-mentioned period T occurring for the first time [0012] two kinds of counting, the above-mentioned ** and **, — among approaches, if ** continues counting as long as the connection improper call has occurred continuously regardless of Period T, a message channel is vacant as for it and a message channel is assigned even once to an originating-connection demand, the total value of the connection improper call which carried out counting till then will be cleared by 0. A message channel is crowded and both of the ways, the above-mentioned ** and **, have appropriate semantics as condition information.

[0013] Drawing 3 is the explanatory view of the way of the above-mentioned **. In this drawing, the generating number of calls of the connection request generated within Period T is 7, and it will be admitted that the total value of the connection improper number of calls in the meantime is 3.

[0014] Drawing 4 is the explanatory view of the way of the above-mentioned **. In this drawing, although the generating number of calls of the connection request generated within Period T is 7, if the method of counting of a connection improper number of calls makes the time of a connection failure occurring for the first time "a connection request 7", a connection request 8

will be not connectable [second] and a current (at time of connection request 8) continuation connection improper number of calls will be set to 2.

[0015] drawing 5 — counting in the above-mentioned ** — an algorithm — drawing 6 — counting in the above-mentioned ** — since the algorithm was shown, respectively, please refer to. It will not be necessary to explain drawing 5 and drawing 6 anew. however — although it will be the method with which drawing 5 and drawing 6 are started by originating-connection demand, and progress of Period T also checks them in the process if it adds — except [this] — an external clock — progress of Period T — detecting — each — counting — the method which performs read-out and a clearance of a counter is also possible.

[0016] Drawing 1 is the block diagram showing the example of a configuration by the side of a base transceiver station as one example of this invention. this drawing — setting — 1 — a base transceiver station and 2 — the number-of-calls multiple address section and 3 — a number of calls — counting — the section, the track which extends to the exchange by which in 4 the radio control section and 6 do not illustrate a control channel control section and 5, and a message channel control section and 8 do not illustrate the line connection section and 7, and 9 — a wireless message channel and 10 — a multiple address channel and 11 — the wireless band for control channels — it comes out.

[0017] Drawing 1 is referred to. In a base transceiver station 1, the wireless band 11 for control channels receives the originating-connection demand from a personal digital assistant, and it incorporates to the control channel control section 4 via the radio control section 5. If the control channel control section 4 accesses the message channel control section 7 and there is an empty channel, connection will be directed and, thereby, the message channel control section 7 will assign the wireless band 9 for empty message channels to the personal digital assistant concerned. When there is no empty channel, an originating-connection failure is notified to a personal digital assistant through the wireless band 11 for control channels.

[0018] the control channel control section 4 — good [a message channel / of prehension], and a failure — a number of calls — counting — the section 3 — notifying — a number of calls — counting — the section 3 carries out counting of each number of calls according to the algorithm shown in drawing 5 or drawing 6 . The number-of-calls multiple address section 2 reads the contents of a connection-request counter or/, and the connection improper number-of-calls counter (drawing 5 , drawing 6) to every [which was defined beforehand] time interval t, and performs the multiple address to a personal digital assistant using the multiple address channel 10. Spacing t shall be independently determined as T in drawing 5 and drawing 6 .

[0019] Or in drawing 1 , you may constitute as follows. When prehension of a message channel 9 is improper, to the originating-connection demand from a personal digital assistant, without forming the number-of-calls multiple address section 2 namely, using the information from the control channel control section 4 As opposed to the personal digital assistant which the control channel control section 4 read the contents of a connection-request counter or/, and the connection improper number-of-calls counter (drawing 5 , drawing 6), and performed the originating-connection demand concerned after updating the number-of-calls control section 3 with a notice of not being connectable The read contents are notified in the wireless band 11 for control channels.

[0020] Drawing 2 is the block diagram showing the example of a configuration by the side of a personal digital assistant as one example of this invention. this drawing — setting — 20 — a personal digital assistant and 21 — the radio control section and 22 — a control channel control section and 23 — a message channel control section and 24 — a number-of-calls receive section and 25 — a display — it comes out.

[0021] Drawing 2 is referred to. Via the radio control section 21, the number-of-calls receive section 24 receives a number-of-calls multiple address signal from a base transceiver station 1, and displays the contents on a display 25. In this case, when it is notified from the control channel control section 22 as timing of a display that read the newest receiving result from the memory of the number-of-calls receive section 24 interior, performed the display and the

originating-connection demand, and connecting became impossible when a display and a personal digital assistant always directed a display at the time of reception, the newest receiving result is read from the memory of the number-of-calls receive section 24 interior, and there are approaches, such as a display. the number-of-calls receive section 24 does direct continuation in the radio control section 21 — not having — counting from the control channel control section 22 — a result can also be displayed on a receipt and a display 25.

[0022]
[Effect of the Invention] In the communication network which includes the base transceiver station which receives the originating-connection demand from a personal digital assistant (wireless terminal) according to this invention as explained above, counting of the originating-connection demand number of calls from a personal digital assistant and the connection improper number of calls is carried out in a base transceiver station, since it becomes possible to notify and display the enumerated data on a personal digital assistant, when the message channel is carrying out congestion, an addresser can be automatically notified of the situation and effectiveness is in reduction of invalid dispatch. Moreover, there is effectiveness to which migration to a base transceiver station with little other traffic is urged to an addresser.

[Translation done.]